

PCT/DE 00/02210

Amended claims

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Patent Claims

1. Sieving device for mechanically separating and extracting solid components, solid bodies, or solid matter from a liquid flowing in a sluice channel, in particular, sieve or filter grating for process, cooling water, or effluent currents or for use in sewage treatment plants or hydroelectric power stations,
- with a number of sieving panels (2, 2', 2'') which are substantially arranged in a transverse direction to the direction of flow of the liquid current (20), and which form a revolving endless sieve belt (1) immersing into the liquid current (20), on which endless sieve belt (1) a plurality of sieving panels (2, 2', 2'') which are sequentially arranged adjacent to one another in the direction of motion (23) of the endless sieve belt (1) form a common sieving surface in the sluice channel, and with a drive (12, 14, 15) for the endless sieve belt (1),
- characterized in that
- the sieving panels (2, 2', 2'') are arranged successively on the endless sieve belt (1) in such a way that the revolving motion of the endless sieve belt (1) is substantially comprised within one single plane, whereby the pivotal axes about which the sieving panels (2, 2', 2'') are pivoted at points of deflection of the endless sieve belt (1) are perpendicular to the sieving surface.

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2. Sieving device according to Claim 1, characterized in that the plane of the revolving motion (23) of the sieving panels (1) is substantially perpendicular to the direction of flow of the liquid current (20).
3. Sieving device according to any one of the preceding claims, characterized in that it comprises a guide device (6), in which at least some sieving panels (2, 2', 2'') are laterally guided.
4. Sieving device according to Claim 3, characterized in that the sequential sieving panels (2, 2', 2'') on the endless sieve belt (1) are adjacent to one another and are not linked together by connectors.
5. Sieving device according to any one of Claims 1 to 3, characterized in that the sieving panels (2, 2', 2'') are linked together by connectors (3).
6. Sieving device according to Claim 5, characterized in that the connectors (3) form part of a drive chain for the endless sieve belt (1), in particular, links of a drive chain (28).
7. Sieving device according to any one of the preceding claims, characterized in that the sieving panels (2, 2', 2'') have a circular structure.
8. Sieving device according to any one of Claims 1 to 6, characterized in that the sieving panels (2, 2', 2'') have a crescent-shaped structure.
9. Sieving device according to Claim 8, characterized in that the outer contours of the crescent-shaped

sieving panels (2, 2', 2'') are respectively formed by two intersecting sections (26, 27) of two circles with the same radius, whereby the midpoint of the first circle (26), which forms the convex section (26) of the outer contour of the sieving panel (2), lies on the second circle, which forms the concave section (27) of the outer contour of the sieving panel (2).

10 10. Sieving device according to Claim 8, characterized in that the outer contours of the crescent-shaped sieving panels (2, 2', 2'') are respectively formed by two non-intersecting sections (26, 27) of two circles with the same radius and two rectilinear, 15 arced connecting elements (38) which connect the circular sections.

20 11. Sieving device according to any one of Claims 8 to 10, characterized in that the crescent-shaped sieving panels (2, 2', 2'') are linked together by connectors (3), in particular, connecting rods (8, 8'), whereby the connectors (3) are each coupled to a sieving panel (2) on one side at the midpoint of the first circle, which forms the convex section (26) of the outer contour of this sieving panel (2), and are 25 coupled on the other side to the adjacent sieving panel (2') at the midpoint of its first circle, which forms the convex section (26') of its first circle, which forms its outer contour, and can be displaced 30 along the convex section (26') of the outer contour of the adjacent sieving panel (2').

12. Sieving device according to Claim 11, characterized in that the connectors (3) are each guided along the

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convex part of the outer contour of the associated adjacent sieving panel (2, 2', 2'').

- 5 13. Sieving device according to any one of Claims 5 to 12, characterized in that the connectors (3) are placed on the clean water side (34) of the endless sieve belt (1).
- 10 14. Sieving device according to any one of the preceding claims, characterized in that the drive comprises a drive chain which runs across an upper sprocket wheel (12a) at an upper reversal device of the endless sieve belt (1) and across a lower sprocket wheel (12b) at a lower reversal device.
- 15 15. Sieving device according to Claim 14, characterized in that the upper sprocket wheel (12a) can be propelled by a drive motor (15).
- 20 16. Sieving device according to any one of the preceding claims, characterized in that the drive is a laterally arranged drive unit for propelling the endless sieve belt (1) to which at least a part of the sieving panels (2, 2', 2'') can be connected over
- 25 at least a portion of the revolving path of the endless sieve belt (1).
- 30 17. Sieving device according to any one of the preceding claims, characterized in that it comprises sieve belt struts (13) which are located on the clean water side (34) of the endless sieve belt (1), preferably near the central axis of the sieving panels (2, 2', 2'').
- 35 18. Sieving device according to Claim 17, characterized in that the endless sieve belt (1) comprises rotating

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supports, e.g. support rollers (11) or balls for support on a sieve belt strut (13).

- 5 19. Sieving device according to Claim 18, characterized in that the rotating supports are located on the connectors (3) or the sieving panels (2, 2', 2'').
- 10 20. Sieving device according to any one of the preceding claims, characterized in that the downward-moving part of the revolving endless sieve belt (1) and the upward-moving part of the revolving endless sieve belt (1) respectively substantially cover the right or left half of the liquid current (20), whereby a fixed center guide (4) is arranged between the two
- 15 halves.
- 20 21. Sieving device according to Claim 20, characterized in that the center guide (4) is permanently fixed at its lower end.
- 25 22. Sieving device according to Claims 20 or 21, characterized in that at least some of the sieving panels (2, 2', 2'') are guided in the center guide (4):
- 30 23. Sieving device according to Claim 22, characterized in that the sieving panels (1) are guided on the center guide (4) by gliding or by means of interior, rotating guide elements, e.g. guide rollers (7b).
24. Sieving device according to any one of the preceding claims, characterized in that at least some of the sieving panels (2, 2', 2'') are designed to be guided in a laterally arranged guide device (6), preferably

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along the outer wall (5) adjacent to the liquid current (20).

- 5 25. Sieving device according to Claim 24, characterized in that at least some of the sieving panels (2, 2', 2'') are designed to be guided in the outer wall (5) itself.
- 10 26. Sieving device according to Claims 24 or 25, characterized in that the sieving panels (1) can be guided on the guide device (6) by gliding or by means of exterior guide rollers (7a).
- 15 27. Sieving device according to any one of Claims 24 to 27, characterized in that the sieving panels (2, 2', 2'') can be dropped down into the guide device (6) in such a way that the resulting sieving surface of the endless guide belt (1) substantially covers over the cross-section of the liquid current (20) with no gaps.
- 20 28. Sieving device according to any one of Claims 24 to 27, characterized in that the guide device (6) or the outer wall (5) is chamfered on the clean water side (34).
- 25 29. Sieving device according to any one of Claims 24 to 28, characterized in that the guide device (6) has a grooved design and the guidable sieving panels (2, 2', 2'') are equipped with exterior guide rollers (7a) on their sides facing the guide device (6).
- 30 30. Sieving device according to any one of the preceding claims, characterized in that it comprises a number of spray jets (18) to spray off the sieving panels
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(2, 2', 2'') of the endless sieve belt (1) which are lifted from the liquid current (20), as well as a debris channel (19) situated on the side of the endless sieve belt (1) which faces the spray jets (18).

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31. Sieving device according to Claim 30, characterized in that the spray jets (18) and the debris channel (19) extend along both the downward-moving portion of the revolving endless sieve belt (1) and the upward-moving portion of the revolving endless sieve belt (1).
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32. Sieving device according to any one of the preceding claims, characterized in that the sieving panels (2, 2', 2'') are formed by a sectional frame (24) and a sieving element (25) held in place by said frame.
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33. Sieving device according to any one of the preceding claims, characterized in that the selected mesh size of the sieving panels (2, 2', 2'') is between 0.1 mm and 10 mm, preferably between 2 mm and 4 mm.
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34. Sieving device according to any one of the preceding claims, characterized in that the sieving panels (2, 2', 2'') comprise a debris pocket (29) on their rear end with respect to the direction of motion (23).
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35. Sieving device according to any one of the preceding claims, characterized in that the sieving panels (2, 2', 2'') have a polygonal structure.
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36. Sieving device according to any one of the preceding claims, characterized in that the configuration of the endless sieve belt (1) is designed for its
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revolving motion in such a way that the sieving
panels (2, 2', 2'') each submerge into and are lifted
from the liquid stream (20) in a rectilinear motion,
whereby they are deflected in a substantially
circular motion at a lower reversal device and an
upper reversal device.

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